UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/677,532	10/03/2003	Hwa-jun Kim	1793.1022	9331

21171	7590	06/22/2005		

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EXAMINER
MERCEDES, DISMERY E

ART UNIT	PAPER NUMBER
2651	

DATE MAILED: 06/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>08 March 2005</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
   closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-14</u> is/are pending in the application.

   4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-14</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>03 October 2003 and 08 March 2005</u> is/are: a)☒ accepted or b)☐ objected to by the
Examiner.

   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

   Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   a)☒ All   b)☐ Some * c)☐ None of:

   1.☒ Certified copies of the priority documents have been received.

   2.☐ Certified copies of the priority documents have been received in Application No. _____.

   3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
      application from the International Bureau (PCT Rule 17.2(a)).

   * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
   Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
   Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1.   Applicant's arguments filed March 8th, 2005 have been fully considered but they are not

persuasive.

2.   Applicant's arguments with respect to claim 8 have been considered but are moot in view of

the new ground(s) of rejection.

3.   In response to applicant's argument, with respect to Claim 1, that the references fail to show

certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e.,

"measuring an off-track amount at a location wherre a read error occurs" (page 6, last paragraph of

Applicant Remarks)) are not recited in the rejected claim(s). Although the claims are interpreted in

light of the specification, limitations from the specification are not read into the claims. See *In re*

Van Geuns, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Claim Rejections - 35 USC § 103

4.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness

rejections set forth in this Office action:

>   (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section
> 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the
> subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary
> skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the
> invention was made.

1.   Claims 1-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. (US

6,650,491 B2), in view of Applicant's Admitted Prior Art, hereinafter AAPA (of instant application,

pages 1-3 of the specification and FIG.1).

Suzuki et al. discloses an off-track retry method for recovering data incorrectly read due to a read error caused by an off-track error in a disk drive, the off-track retry method comprising: extracting read gain characteristics while varying an off-track amount (as depicted in Figures 11a-11b); determining an off-track amount based upon the read gain characteristics (as depicted in Figures 11a-11b & FIG.6, "S5-S7"); reading data using the determined off-track amount (col.4, lines 44-49).

Suzuki et al. does not specifically disclose determining whether the read data is normal; and determining whether the data incorrectly read due to the read error has been recovered.

However, AAPA discloses such on (Fig.1 of instant specification).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to implement AAPA 's steps to the method disclosed by Suzuki, the motivation being because it would provide the Suzuki's method with the enhanced capability of determining if the process was successful by verifying if the data has being successfully read.

As to Claim 2, in the obvious combination, AAPA further discloses a method wherein reading the data by moving a head away from a centerline of a track by up to a determined off-track amount; and reading the data by moving the head away from the centerline of the track by up to an off-track range having a predetermined difference with the determined off-track amount (as depicted in FIG. 1, "S106" & page 2, ¶0010 and ¶0012 of instant application).

As to Claim 3, Suzuki et al. further discloses measuring read gains while gradually varying an off-track amount within a predetermined off-track range (col.4, lines 51-52 & as depicted in Figures 8a-b, 11a-b); determining an off-track direction based upon a gradient of a curve of the measured read gains (col.4, lines 33-38 & col.4, lines 1-8); and identifying an off-track amount corresponding

to a minimum of the measured read gains (col.3, lines 57-64; col.4, lines 1-8 & 40-47 and as depicted in Figures 11a and 11b)

As to Claim 4, Suzuki et al. further discloses measuring read gains at a place on the centerline of a track and a plurality of places at either side of the centerline of the track and determining an off-track direction based upon a gradient of a curve of the measured read gains (col.4, lines 33-38 and as depicted in Figures 8a-b and 11a-b); measuring read gains while gradually varying an off-track amount within a predetermined off-track range (col.4, lines 51-52 & as depicted in Figures 8a-b, 11a-b); and identifying an off-track amount corresponding to a minimum of the measured read gains (col.3, lines 57-64; & 40-47 and as depicted in Figures 11a and 11b).

As to Claim 5, Suzuki et al. further discloses determining an off-track direction and a degree to which data is recorded off-track (col.4, lines 33-38).

As to Claim 6, Suzuki et al. further discloses the off-track retry method of claim 1, wherein the read gain is smallest when data is magnetized in a negative direction off of a centerline of a desired track and the off-track amount reaches a predetermined off-track amount in the negative direction; and the read gain increases as the off-track amount increases (as depicted in Figures 11a-11b).

As to Claim 7, Suzuki et al. further discloses the read gain is smallest when data is magnetized in a positive direction off of a centerline of a desired track and the off-track amount reaches a predetermined' off-track amount in the positive direction; and the read gain decreases as the off-track amount increases (as depicted in FIG.11a).

As to Claim 8, Suzuki et al. discloses an off-track retry method for recovering data comprising: measuring an off-track amount at a location where a read error occurs (col.2, lines 44-50), reading data based upon the measured off-track amount (col.4, lines 44-49).

Suzuki fails to specifically disclose determining whether the read data is normal; and determining whether the data incorrectly read due to the read error has been recovered.

However, AAPA discloses such (Fig.1 of instant specification).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to implement AAPA 's steps to the method disclosed by Suzuki, the motivation being because it would provide the Suzuki's method with the enhanced capability of determining if the process was successful by verifying if the data has being successfully read.

As to Claim 9, Suzuki et al. further discloses extracting read gain characteristics while varying the off-track amount; and determining an off-track direction and a degree based upon the read gain characteristics (Figures 11a-11b & Figures 10a-b).

As to Claim 10, in the obvious combination, Suzuki et al. further discloses the off-track direction is identified based upon a gradient of a read gain curve showing the read gain characteristics (col.4, lines 33-38 & col.4, lines 1-8).

AS to Claim 11, Suzuki et al. discloses an off-track retry method determining an off-track direction and an off-track amount at the same time by measuring read gains at different places while gradually varying the off-track amount within a predetermined off-track range (as depicted in Figures 8a-b, 11a-b); reading data using the determined off-track direction and the off-track amount (col.4, lines 44-49).

Suzuki et al. does not specifically disclose determining whether the read data is normal; and determining whether the data incorrectly read due to the read error has been recovered.

However, AAPA discloses such (on FIG.1 of instant specification).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to implement AAPA 's steps to the method disclosed by Suzuki, the motivation being

because it would provide the Suzuki's method with the enhanced capability of determining if the process was successful by verifying if the data has being successfully read.

As to Claim 12, Suzuki et al. further discloses off-track direction is identified based upon a gradient of a curve of the measured read gains (col.4, lines 33-38 and as depicted in Figures 8a-b and 11a-b).

As to Claim 13, Suzuki et al. discloses an off-track retry method obtaining an off-track amount by measuring a read gain a three points (as depicted in Figures 8a-b, 11a-b); reading data using the off-track amount (col.4, lines 44-49

Suzuki et al. does not specifically disclose determining whether the read data is normal; and determining whether the data incorrectly read due to the read error has been recovered.

However, AAPA discloses such (on FIG.1 of instant specification).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to implement AAPA 's steps to the method disclosed by Suzuki, the motivation being because it would provide the Suzuki's method with the enhanced capability of determining if the process was successful by verifying if the data has being successfully read.

As to Claim 14, Suzuki et al. further discloses measuring the read gain at a centerline of a track (as depicted in Figures 11a-11b); measuring the read gains at a first point and a second point on either side of the centerline of the track (as depicted in Figures 11a-11b); determining an off-track direction based upon a gradient of a curve of the measured read gains (col.4, lines 33-38 and as depicted in Figures 8a-b and 11a-b); remeasuring the read gains while varying the off-track amount in a predetermined off-track range (as depicted in Figures 11a-11b); differentiating the measured read gains; and determining the off-track amount based upon a maximum value of the result of the differentiation (col.4, lines 1-8).

Conclusion

5.   The prior art made of record and not relied upon is considered pertinent to applicant's

disclosure:

- Kim et al. (US 6,275,346) discloses techniques for optimizing read/write channel parameters

- Wang et al. (US 2003/0202268 A1) discloses system and method for performing adaptive read retry operations in a datra storage device.

- Fung et al. (US 5,353,170) discloses error recovery data storage system and method with two position read verification.

- Le et al. (US 6,008,962) discloses a method and apparatus for providing read and write skew offset information for magneto resistive head

- Tswako et al. (US 5,696,643) discloses a disk drive apparatus and read error recovery method in a disk drive apparatus

- Suzuki et al. (US 5,521,773) discloses a method of compensating off-track in disk unit.

Any inquiry concerning this communication or earlier communications from the examiner

should be directed to Dismery E. Mercedes whose telephone number is 571-272-7558. The

examiner can normally be reached on Monday - Friday, from 9:00am - 4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor,

David Hudspeth can be reached on 571-272-7843. The fax phone number for the organization

where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

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contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Dismery E Mercedes
Examiner
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